

1 IN THE UNITED STATES
2 PATENT AND TRADEMARK OFFICE

3 IN RE APPLICATION OF
4 ARIEL S. GRIMES
5 FOR A

6 PORTABLE SYSTEM FOR INPUTTING,
7 EDITING, AND OUTPUTTING DIGITAL
8 MULTIMEDIA DATA

BACKGROUND OF THE INVENTION

Field of the Invention:

The present invention relates to a system for inputting, editing, and outputting multimedia. More particularly, the present invention relates to a portable system for inputting, editing, and outputting digital multimedia data.

Description of the Prior Art:

Live action or full motion video has been used with personal computers, particularly for so-called multimedia presentations where different types of media are combined to present information to a user. In addition, personal computers have been increasingly used in video applications to manipulate video signals (e.g., editing, computer animation, or the like).

Motion video is interpreted to mean any video segment or presentation including live action, real time, or full motion video. Examples of motion video include, but are not limited to, NTSC, PAL, SECAM, or MUSE type television signals, digital or

1 analog HDTV signals, or the like, including live television signals
2 or broadcasts, cable television signals or the like, or motion
3 picture video, which may be suitably digitized and converted into
4 a format suitable for presentation on a computer display. The term
5 motion video may also include, but is not limited to, any computer
6 generated display or display segment, including computer animation
7 or the like.

8 For multimedia presentations, it is particularly useful to be
9 able to provide a motion video interface to a portable or so-called
10 notebook or laptop computer or the like (collectively referred to
11 hereinafter as "portable computer") to display motion video on a
12 computer screen or attached monitor or television. A separate
13 video interface may be provided in a portable computer, tied to the
14 system bus or incorporated into the video adapter in order to
15 import motion video into the portable computer. Such an interface,
16 however, would increase the cost of a personal or portable computer
17 significantly. Since only a portion of computer users are
18 envisioned as requiring such a video interface, it is desirable to
19 be able to offer a video interface as an add-on option for a
20 personal or portable computer.

1 In order to support optional features for portable or personal
2 computers, an industry standard known as the PCMCIA standard has

1 been developed to allow computer manufactures to offer optional
2 features on a removable card, referred to as a PCMCIA card.
3 Optional features such as modems, I/O ports, network interfaces,
4 memory, and even hard drives have been incorporated into PCMCIA
5 cards which may be used to upgrade a portable or personal computer
6 to add such features.

7 Unfortunately, the PCMCIA standard has some inherent
8 limitations, which make it difficult to adapt to video data
9 transmission. For motion video, digitized under the CCIR 601
10 standard, for example, an average bandwidth of 27 megabytes per
11 second may be required in order to transmit the video data from one
12 device to another.

13 Modern high performance computers (e.g., IntelTM, PentiumTM,
14 486-33 MHz, or the like) using advanced bus structures such as the
15 PCI or VESA bus architecture may have a memory bandwidth in the
16 range of 25 to 35 megabytes per second. Thus, motion video data
17 can be successfully transmitted within the bus structure of a high
18 performance personal or portable computer. PCMCIA, however, has a
19 bandwidth limitation of five megabytes per second. Thus, the
20 PCMCIA interface acts as a bottleneck or barrier for transmitting
21 continuous motion video to a portable or personal computer.

1 Various video compression techniques are known in the art and
2 have been implemented to reduce bandwidth or increase channel
3 space, for example, for satellite, cable TV, so-called "Video On
4 Demand" or other video services (e.g., Picturephone™ or the like).
5 One technique developed for black and white video transmission is
6 described in "Block Truncation Coding: A New Approach to Image
7 Compression," O. R. Mitchell et al., Conference Records, IEEE
8 International Conference on Communication I, June 1978, 12B.1.1-
9 12B.1.4, which utilized a relatively simple technique. This
10 technique relies upon the fact that the human eye generally does
11 not ascertain all of the minute distinctions which may be present
12 in a video signal. In order to provide a useful video image, one
13 need only reproduce a video image which is visually
14 indistinguishable from the transmitted image, regardless as to
15 whether any of the quality of the data is lost.

.6 Although, this technique reduces the analog pixel values to
.7 discrete levels, the system still requires at least one bit per
.8 pixel to transmit the luminance values (relative intensities) for
9 each pixel in the matrix. In addition, the two moment values (mean
0 and standard deviation) must also be transmitted for each matrix of
1 pixels. This technique also does not provide for the transmission
2 of color images. Finally, since the pixels are arranged in a

1 matrix, the data must be serialized at the receiver in order to
2 provide image data in a scan line format.

3 U.S. Patent Number 5,642,139 to Eglit et al., overcomes these
4 problems, by providing a PCMCIA card which can transmit full motion
5 or live action video through PCMCIA host to a computer data bus,
6 and which is included herein by reference thereto.

7 Numerous innovations for multimedia input and output devices
8 have been provided in the prior art that will be described. Even
9 though these innovations may be suitable for the specific
10 individual purposes to which they address, however, they differ
11 from the present invention.

12 **FOR EXAMPLE,** U.S. Patent Number 4,706,117 to Schoolman teaches
13 a portable television playback system that includes a video source
14 unit, video processing circuitry, audio processing circuitry, and
15 a stereo viewing and sound unit. The video source unit is a
16 television receiver, a small videocassette tape cartridge player,
17 or a stereo optical video disc player. The viewing and sound unit
18 has stereoscopic and stereophonic capabilities and is generally a
19 head worn unit having right and left image display devices and
20 right and left earphones. The video and audio processing circuits
21 receive the signals from the video source unit and parallel the

1 video and audio signals to drive the stereo output devices if the
2 source is a television receiver or a videocassette tape player or
3 perform demultiplexing functions to separate the right and left
4 video and audio signals from the right and left multiplexed
5 video/audio signals. The video source unit and the video and audio
6 processing circuits are packaged in a single portable case which
7 may be connected to the head worn viewing and sound unit by an
8 appropriate cable for use.

9 **ANOTHER EXAMPLE**, U.S. Patent Number 5,214,514 to Haberkern
10 teaches a video/sound apparatus in the form of a suitcase-like
11 foldable housing, including a housing cover portion for
12 accommodating a projection screen as well as a housing bottom
13 portion for accommodating various control elements, the video/sound
14 apparatus including further a video recording and playback device
15 as well as auxiliary receptacles for connection with auxiliary
16 equipment, with the two housing portions being joined to one
17 another by a hinge member which contains the stereo speakers, and
18 with the video/sound apparatus also being equipped with a TV
19 receiving/reproduction section and a CD record player. While the
20 video/sound apparatus according to the invention is very versatile
21 with respect to its various functions which go beyond that of an
22 apparatus for use strictly as a video/sound recorder, it is very

1 compact and it combines the functions of a television, video
2 recorder and CD record player.

3 **STILL ANOTHER EXAMPLE**, U.S. Patent Number 5,511,000 to Kaloi
4 *et al.* teaches an improved electronic solid-state record/playback
5 device (SSRPD) and electronic system that may be used to record and
6 playback information such as audio, video, control, and other data.
7 The SSRPD uses no tape or moving parts in the actual
8 record/playback process but includes an audio and/or video and/or
9 other data record/playback module (RPM), which performs all of the
10 record signal conversion, recording and data compression
11 algorithms, digital signal processing, and playback signal
12 conversion. The SSRPD has program input processing and control
13 output processing modules so that other devices may be controlled
14 in different ways including interactive control. A time and
15 control processor module facilitates internal synchronization of
16 the SSRPD audio, video, and control information, as well as
17 synchronization with other devices. The SSRPD information
18 described is recorded into an internal resident memory(s). The
19 novel interface allows information to be exchanged without
20 degradation via a digital Portable Storage Device (PSD) which may
21 be a Random Access Memory card (RAM card), with other SSRPDs as
22 well as to a special Computer Interface Device (CID). The CID is
23 an intelligent device that connects to a standard computing device

1 such as a PC and facilitates functions such as reading, writing,
2 editing, and archiving PSD data, as well as performing diagnostic
3 routines.

4 **YET ANOTHER EXAMPLE**, U.S. Patent Number 5,642,139 to Eglit et
5 al. teaches a motion video that may be imported into a personal or
6 portable computer through an I/O port having a limited data
7 bandwidth, such as a PCMCIA interface. Motion video data is
8 compressed by sub-sampling both luminance and chrominance
9 difference data for different sized groups of pixels. The
10 compression apparatus may be formed on a PCMCIA card which
11 interfaces with a personal or portable computer. Motion video
12 data, compressed by as much as 5:1 or 6:1, is transferred through
13 the PCMCIA card to a host computer. The host computer may
14 serialize the compressed data and store the data in serialized
15 compressed format in a video memory of a video controller. The
16 video controller is provided with decompression circuitry to
17 decompress the motion video data into luminance and chrominance
18 difference data. The luminance and chrominance difference data is
19 converted into RGB data and displayed in a video display.

0 **STILL YET ANOTHER EXAMPLE**, U.S. Patent Number 5,689,732 to
1 Kondo teaches a recording and/or reproducing system that has a

1 recording and/or reproducing section and an interfacing unit. The
2 recording and/or reproducing section records and/or reproduces
3 digital data or digital signals on or from a loaded recording
4 medium, such as a magnetic tape. The interfacing unit has a first
5 input/output section for exchanging data and/or signals with an
6 external equipment and a second input/output section for exchanging
7 data and/or signals with the recording and/or reproducing section.
8 The interfacing unit converts data and/or signals supplied from the
9 recording/reproducing section through the second input/output
10 section and sends the converted data and/or signals through the
11 first input/output section to the external information equipment
12 piece, while converting data and/or signals supplied through the
13 first input/output section from the external information equipment
14 piece and sending the converted data and/or signals through the
15 second input/output section to the recording and/or reproducing
16 section.

7 It is apparent that numerous innovations for multimedia input
8 and output devices have been provided in the prior art that are
9 adapted to be used. Furthermore, even though these innovations may
0 be suitable for the specific individual purposes to which they
1 address, however, they would not be suitable for the purposes of
2 the present invention as heretofore described.

SUMMARY OF THE INVENTION

ACCORDINGLY, AN OBJECT of the present invention is to provide a portable system for inputting, editing, and outputting digital multimedia data that avoids the disadvantages of the prior art.

ANOTHER OBJECT of the present invention is to provide a portable system for inputting, editing, and outputting digital multimedia data that is simple and inexpensive to manufacture.

STILL ANOTHER OBJECT of the present invention is to provide a portable system for inputting, editing, and outputting digital multimedia data that is simple to use.

BRIEFLY STATED, YET ANOTHER OBJECT of the present invention is to provide a portable system for inputting, editing, and outputting digital multimedia data, that includes a PCMCIA memory card, a camcorder, a digital camera, a TV, and a computer. The camcorder, the digital camera, or the VCR directly receives therein the PCMCIA memory card, and records thereon, digital multimedia data of what is being recorded by the camcorder, the digital camera, or the VCR. The TV is operatively connected to the VCR. The VCR alternatively directly receives therein the PCMCIA memory card and allows the TV

1 to play the digital multimedia data stored on the PCMCIA memory
2 card directly received in the VCR. The computer directly receives
3 therein the PCMCIA memory card, and saves thereon, digital
4 multimedia data of what is being saved by the computer. The
5 computer, alternatively, directly receives therein the PCMCIA
6 memory card and plays the digital multimedia data recorded on the
7 PCMCIA memory card by one of the camcorder, the digital camera, the
8 VCR, and the computer, respectively. The computer, alternatively,
9 directly receives therein the PCMCIA memory card and allows the
10 digital multimedia data recorded on the PCMCIA memory card by one
11 of the camcorder, the digital camera, the VCR, and the computer,
12 respectively, to be edited.

13 The novel features which are considered characteristic of the
14 present invention are set forth in the appended claims. The
15 invention itself, however, both as to its construction and its
16 method of operation, together with additional objects and
17 advantages thereof, will be best understood from the following
18 description of the specific embodiments when read and understood in
19 connection with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

The figures of the drawing are briefly described as follows:

FIGURE 1 is a block diagram of the system of the present invention; and

FIGURE 2A-2E are a flow chart of the method of using the present invention.

LIST OF REFERENCE NUMERALS

UTILIZED IN THE DRAWING

- 10** portable system of present invention for inputting, editing, and outputting digital multimedia data **12**
- 12** digital multimedia data **12**
- 14** PCMCIA memory card
- 16** camcorder
- 18** digital multimedia data of what is being recorded by camcorder **16**
- 20** digital camera
- 22** digital multimedia data of what is being recorded by digital camera **20**
- 24** VCR
- 26** digital multimedia data of what is being recorded by VCR **24**
- 28** TV
- 30** miniature TV/VCR combo
- 32** computer
- 34** digital multimedia data of what is being saved by computer **32**
- 36** laptop
- 38** data-stored PCMCIA card

1 **DETAILED DESCRIPTION OF**
2 **THE PREFERRED EMBODIMENT**

3 Referring now to the figures, in which like numerals indicate
4 like parts, and particularly to **FIGURE 1**, which is a block diagram
5 of the system of the present invention, the portable system of the
6 present invention is shown generally at **10** for inputting, editing,
7 and outputting digital multimedia data **12**.

8 The configuration of the portable system **10** can best be seen
9 in **FIGURE 1**, which again is a block diagram of the system of the
10 present invention, and as such, will be discussed with reference
11 thereto.

12 The portable system **10** comprises a PCMCIA memory card **14**.

13 The portable system **10** further comprises a camcorder **16** that
14 directly receives therein the PCMCIA memory card **14**, and records
15 thereon, digital multimedia data **18** of what is being recorded by
16 the camcorder **16**.

1 The portable system **10** further comprises a digital camera **20**
2 that directly receives therein the PCMCIA memory card **14**, and
3 records thereon, digital multimedia data **22** of what is being
4 recorded by the digital camera **20**.

5 The portable system **10** further comprises a VCR **24** that
6 directly receives therein the PCMCIA memory card **14**, and records
7 thereon, digital multimedia data **26** of what is being recorded by
8 the VCR **24**.

9 The portable system **10** further comprises a TV **28** that is
10 operatively connected to the VCR **24**.

11 The VCR **24** alternatively directly receives therein the PCMCIA
12 memory card **14** and allows the TV **28** to play the digital multimedia
13 data **18, 22, 26, 34** stored on the PCMCIA memory card **14** directly
14 received in the VCR **24**.

5 The VCR **24** and the TV **28** can be combined in a miniature TV/VCR
6 combo **30**.

7 The portable system **10** further comprises a computer **32** that
8 directly receives therein the PCMCIA memory card **14**, and saves

1 thereon, digital multimedia data **34** of what is being saved by the
2 computer **32**.

3 The computer **32**, alternatively, directly receives therein the
4 PCMCIA memory card **14** and plays the digital multimedia data **18, 22,**
5 **26, 34** recorded on the PCMCIA memory card **14** by one of the
6 camcorder **16**, the digital camera **18**, the VCR **20**, and the computer
7 **26**, respectively.

8 The computer **32**, alternatively, directly receives therein the
9 PCMCIA memory card **14** and allows the digital multimedia data **18,**
10 **22, 26, 34** recorded on the PCMCIA memory card **14** by one of the
11 camcorder **16**, the digital camera **18**, the VCR **20**, and the computer
12 **26**, respectively, to be edited.

13 The computer **32** can be a laptop **36**.

14 The method of using the portable system **10** for inputting,
15 editing, and outputting digital multimedia data **12** can best be seen
16 in **FIGURES 2A-2E**, and as such, will be discussed with reference
17 thereto.

1 **STEP 1:** Load the PCMCIA memory card **14** into one of the digital
2 camera **20**, the camcorder **16**, the computer **32**, and the VCR
3 **24**.

4 **STEP 2:** Activate the one of the digital camera **20**, the camcorder
5 **16**, the computer **32**, and the VCR **24** to input digital
6 multimedia data **18, 22, 26, 34** to the PCMCIA memory card
7 **14** so as to form a data-stored PCMCIA card **38**.

8 **STEP 3:** Remove the data-stored PCMCIA CARD **38** from the one of the
9 digital camera **20**, the camcorder **16**, the computer **32**, and
10 the VCR **24**.

11 **STEP 4:** Determine if the digital multimedia data **18, 22, 26, 34**
12 stored on the data-stored PCMCIA card **38** is to be edited?

13 **STEP 5:** Go directly to **STEP 8**, if answer to **STEP 4** is no.

14 **STEP 6:** Load the data-stored PCMCIA card **38** into the computer **32**,
15 if answer to **STEP 4** is yes.

16 **STEP 7:** Edit the digital multimedia data **18, 22, 26, 34** stored on
17 the data-stored PCMCIA card **38**, if **STEP 6** is performed.

STEP 8: Load the data-stored PCMCIA card **38** into one of the computer **32** and the VCR **24**.

STEP 9: View the digital multimedia data **18, 22, 26, 34** stored on the data-stored PCMCIA card **38**.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of constructions differing from the types described above.

While the invention has been illustrated and described as embodied in a portable system for inputting, editing, and outputting multimedia, however, it is not limited to the details shown, since it will be understood that various omissions, modifications, substitutions and changes in the forms and details of the device illustrated and its operation can be made by those skilled in the art without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications

1 without omitting features that, from the standpoint of prior art,
2 fairly constitute characteristics of the generic or specific
3 aspects of this invention.